CLAIMS

1-10 (cancelled)

11. (currently amended) System for producing solar cells, comprising:
- sectioning devices for manufacturing wafers from a silicon ingot,
- wafer processing devices for producing a solar cell~~,~~ ;
- at least one imaging device for providing images of wafers and cells~~,~~ ;
- a processing unit for comparing a wafer image to a cell image, and upon match between a cell image and a wafer image, assigning the current cell to the current wafer~~,~~ ; and
- a memory unit.

12. (original) System according to claim 11,
characterized in that the imaging device is adapted to provide images of the crystallographic structure of the wafer and the cell and the processing unit is adapted to compare the crystallographic structure of the wafer and the cell to one another.

13. (original) System according to claim 11 or 12, where the processing unit is adapted to assign wafer identification data to the corresponding cell.

14. (currently amended) System according to <u>claim 13</u> ~~any of the preceding claims~~, where the processing unit is connected to a cell inspection unit providing cell inspection data, and is adapted to:
- assign inspection data to each cell~~,~~ ;
- assign a wafer position to each wafer~~,~~ ; and
- upon match between a cell image and a wafer image, assign cell inspection data to each wafer position.

15. (Currently amended) System according to claim 14, ~~wherein when no match between a wafer image and a cell image is found, "breakage" is assigned as inspection data for that wafer position~~ <u>wherein the processing unit comprises instructions arranged to assign "breakage" as inspection data for the wafer position when no match between the wafer image and the cell image is found at that wafer position</u>.

16. (original) System according to claim 14, where the processing unit is connected to an input device for ingot and/or wafer production control, and/or is adapted to
- adjust ingot and/or wafer production parameters based on cell inspection data.

17. (original) System according to any of the preceding claims, comprising two imaging devices.

18. (original) System according to any of the preceding claims, wherein the imaging device(s) is a CCD camera, a digital camera or an IR depicting system.

19. (original) System according to any of the preceding claims, where the memory unit is adapted to store the wafer image and the cell image in a memory before and/or after a cell is assigned to a wafer.

20. (currently amended) System according to any of the preceding claims and adapted for controlling production parameters in a solar cell production process, characterized in that it comprises:
- a unit for providing wafer position data and/or manufacturing history; ;
- a cell inspection unit for providing inspection data for each cell; ;
and that the processing unit is adapted to upon a match between a cell image and a wafer image, assigning the current cell's inspection data to the current wafer and/or wafer position.

21. (original) System according to claim 20, where the processing unit is adapted to regulate ingot and/or wafer production based on cell inspection data assigned to wafers and/or wafer positions.

22. (new) Method for establishing correlation between wafers and solar cells produced from said wafers, comprising,

a) providing a silicon wafer having a unique crystalline structure;

b) capturing an image of the wafer with an imaging device, said imaging device being arranged to render images of sufficient resolution to enable identification of the wafer's crystalline structure;

c) providing a solar cell manufactured from a silicon wafer, said solar cell having a unique crystalline structure corresponding to the crystalline structure of the wafer from which it was manufactured;

d) capturing an image of the solar cell with an imaging device, said imaging device being arranged to render images of sufficient resolution to enable identification of the solar cells's crystalline structure;

e) comparing the image of the wafer to the image of the solar cell in a processing unit, said processing unit comprising image-recognition software adapted for the recognition and comparison of crystalline structures; and

f) establishing, based upon the results of the comparison of images by the processing unit, a correlation or lack thereof between the wafer and the solar cell.

23. (new) A method according to claim 22, wherein the imaging device is a CCD camera, a CMOS camera, a digital camera or an IR depicting system.

24. (new) A Method according to claim 23, further comprising storing the images of the wafer and the solar cell in the memory of a computer.

25. (new) A method according to claim 24, further comprising the steps of

- gathering inspection data for the solar cell, and entering this data in the memory of the computer;

- gathering manufacturing history data for the wafer, and entering this data in the memory of the computer;

-in the event of a positive correlation between the solar cell and the wafer, including the solar cell inspection data in the manufacturing history of the wafer; and

-storing the data in a data base, stored in the memory of the computer.

26. (new) A method according to claim 25, wherein the manufacturing history data for the wafer comprises position data related to the wafer's position in a ingot from which it was manufactured.

27. (new) A method for the production of solar cells, comprising

a) providing a silicon ingot;

b) sectioning the ingot;

c) cutting silicon wafers from the ingot, each of said wafers having a unique crystalline structure;

d) gathering and storing manufacturing history data of the wafers in the memory of a computer;

e) capturing an image of the wafer with an imaging device, said imaging device being arranged to render images of sufficient resolution to enable identification of the wafer's crystalline structure;

f) storing the image of the wafer in the memory of a computer;

g) processing, by the use of specially adapted processing apparatus, the wafers into solar cells, each said solar cells having a unique crystalline structure corresponding to the crystalline structure of the wafer from which it was manufactured;

h) gathering and storing inspection data for the solar cells in the memory of the computer;

i) capturing an image of the solar cell with an imaging device, said imaging device being arranged to render images of sufficient resolution to enable identification of the solar cells's crystalline structure;

j) storing the image of the solar cell in the memory of the computer, said computer being loaded with image-recognition software adapted for the recognition and comparison of crystalline structures;

k) comparing the images of the wafers with image of the solar cells in the computer, and establishing, based upon crystalline structure comparison, the identity of the wafer from which a particular solar cell was created; and

l) based upon the inspection data of the solar cell, adjusting manufacturing parameters for the wafers.

28. (new) A method according to claim 27, wherein the manufacturing parameters of the wafer comprise the position in the ingot from which it was cut.

29. (new) A method according to claim 27, wherein the inspection data for the solar cells comprises breakage data.